VOL. 1. NO. 24. NOVEMBER 24, 1904

THE JOURNAL OF PHILOSOPHY
PSYCHOLOGY AND SCIENTIFIC METHODS

NOTE ON THE PHYSICAL WORLD-ORDER. II

HAVING defined a *physical science* as *one which employs in its description of nature only such terms as can adequately be defined by the use of the measuring rod,* it was shown in what sense sciences recognized as physical fell under this definition. The question, What sciences, if any, do not fall under this definition, led to the further question, What does it mean to say that a phenomenon is enexplicable in physical terms?

By way of leading up to this special question let us ask a more general one: When is any phenomenon shown to be inexplicable in terms of any given law? That we do constantly assume phenomena to be inexplicable in terms of the given law hardly needs illustration; but to give one,—the turning of a galvanometer needle under the influence of a current is said to be inexplicable in terms of the law of gravitation. But why?

Here we must go step by step, and let us begin with a very simple case. If I dip the end of a capillary tube into a tank of water, the water will rise in the tube and remain stationary at a certain distance above the level of the water in the tank. This phenomenon is described as a case of capillary attraction, and it was once supposed that capillary attraction might be explained in terms of the law of gravitation. It is now generally admitted that no such explanation is possible. In what does the proof of this impossibility consist?

To say that the rise of water in the capillary tube can not be the result of gravitation would at first suggest nothing more than the perfectly evident reflection that the mass represented by the little column in the tube can not be repelled from the center of the earth in conformity with a law which provides for the attraction of masses. But with this obvious conclusion might come a new suggestion: if we consider the walls of glass and the column of water to be made up of molecules of glass and water respectively, could we not make such hypotheses respecting the masses and the interstitial distances of these molecules as would reveal the rise of a mass against gravity to be really a case of the same law of gravitation? The question is

meaningful, and if we are at liberty to distribute the masses and the distances without further restriction than that the sum of the molecular masses should equal the gross mass, the spatial arrangement of the molecules conform with the gross dimensions of the bodies, we should, no doubt, be able to explain the phenomenon of capillarity on a gravitational basis. But the question at once arises, Are we free to distribute masses and assume distances without other restrictions than those mentioned? Such might be the case if the phenomenon of capillarity were the only one which led us to assume a molecular structure of bodies. As it is, however, the size of molecules and their distances have been fixed by observations quite independent of the phenomenon of capillary attraction, and they have been fixed in such a way that, without revolutionizing the rest of molecular physics, those particular phenomena can not be explained in terms of the law of gravitation.

This, then, is the sense in which, in the actual pursuit of science, we say that a given fact can not be explained by a given law. But it will be remarked that this demonstration is of a somewhat hesitating kind. So much depends upon our definition of the phenomenon we are called upon to explain. Define it in one way, it is inexplicable; define it in another way, it is explicable. These two or more ways of defining a phenomenon are necessarily consistent, but they are sufficiently different to make it possible to return the answer *yes* and *no* to the same question. How can we ever be sure that we have obtained a final *no* to the question: Can such and such a phenomenon be so and so explained? The most that we can say is this: the given phenomenon can not be explained by the given law, *unless* we describe the phenomenon in a way which would only be permissible in case we made changes of such and such magnitude in our accepted scientific conceptions. Nevertheless, let us take this demonstration of the inexplicability of a given phenomenon by a given law as the nearest approach we can make to absolute demonstration: let us admit that it offers all that can be demanded of such a demonstration. The question arises, Under what conditions has it a meaning to ask for such a demonstration of inexplicability?

If I mix a kilogram of water at 50° C. with a kilogram of water at 100° C. without allowing any heat to escape, the resulting mixture will have a temperature of 75° C. Can this phenomenon be explained by the law of gravitation? It seems absurd to ask such a question. We no longer seek to demonstrate the impossibility of the explanation demanded: we are satisfied with an immediate insight into the meaninglessness of the proposition. Evidently, we say, it is impossible that a phenomenon for whose description we require the term ' temperature ' should be susceptible of explanation by a law in which the term

' temperature ' does not even occur. Capillary phenomena may not be explicable by the law of gravitation, but they are at least describable in the dimensions of that law, to wit, the dimensions mass, length, and time. It is therefore meaningful to ask whether such phenomena be explicable in terms of this law, and we require a demonstration of the law's failure to explain before we answer in the negative. But the suggestion that a phenomenon describable in one set of dimensions should be explicable by a law applying to another set of dimensions, is one that it would occur to no one seriously to offer.

If it be meaningless to ask for a mechanical explanation of the phenomena of heat, so long as these phenomena are described in terms of temperature, there is, nevertheless, a way in which we may redescribe the phenomena of heat without making use of this non-mechanical term, and when we have so redescribed the phenomena the search for a mechanical explanation of them no longer presents an absurdity. Suppose in our example we were to describe the water of higher temperature as a body whose molecules were vibrating with a certain average velocity, and the water of lower temperature as one whose molecules were vibrating with another and lower average velocity. Now let us picture to ourselves that in the mixing of these two masses of water the redistribution of velocities takes place according to the known laws of impact of elastic bodies, giving a mean average velocity for the mixture. We should then have given a mechanical explanation of the phenomenon of mixture, having first, however, given it a mechanical description.

The moment it becomes meaningful to ask whether a phenomenon be explicable in terms of a given law, at that moment it becomes necessary to demonstrate the impossibility of such an explanation before accepting a negative answer to the question. The search for the mechanical explanation of physical phenomena is one of the significant movements of physical science, and we observe the conditions to the success of this search. They are, first, the restatement of the problem in mechanical terms; and second, the finding of a law in which these terms may be connected. We have seen (in the example of the phenomenon of capillary attraction and the law of gravitation) the sense in which a phenomenon describable in mechanical terms may be demonstrated to be inexplicable by a *given* law connecting such terms. We now ask whether any such demonstration could be given of the impossibility of the more general task of explaining a given mechanical phenomena in terms of *any* mechanical law. In the first case the demonstration was one only when we placed upon ourselves certain restrictions as to the nature of the assumptions that could be made. In the present case, too, demonstration would evi-

dently be possible only in case we were able to find similar (though perhaps much broader) restrictions. If, for example, we were to understand by a mechanical explanation not merely one that was conceived in terms of mass, length, and time, but further one that was required to conform to particular axioms (the axioms, say, of Newton's mechanics), it is conceivable,—yes, it has even been suggested,—that certain physical phenomena could receive no mechanical explanation. But if we free ourselves from all restrictions, it follows from what has gone before that no such demonstration would be possible. It would, therefore, be meaningless to make the hypothesis that a mechanical phenomenon was inexplicable in mechanical terms. It would evidently be equally meaningless to make the no more restricted hypothesis that a given physical phenomenon, *i. e.*, a phenomenon capable of physical description, was inexplicable in physical terms.

We have now seen in what cases it is meaningful and in what cases it is meaningless to make the hypothesis that a given phenomenon is inexplicable in terms of a given law.

1. If inexplicable is to mean anything more than unexplained, we must intend the inadequacy of the type of explanation sought to be demonstrable.

2. We see that such a demonstration could have a meaning, although a relative one, in case we were required to explain a phenomenon describable in certain terms by means of a special law connecting these terms (*e. g.*, to explain capillarity by the law of gravitation).

3. Under this head would fall also the case in which we were required to explain a phenomenon describable in one set of terms by a special law connecting another set of terms, provided we were first able to redescribe the phenomenon in the terms of the law (*e. g.*, the case in which we were asked to explain the phenomenon of the heat of mixtures in terms of the law of impact of elastic bodies).

4. It is meaningless to seek for a demonstration of the inexplicability by a given law of a phenomenon described in another set of terms without first redescribing the phenomenon in the terms of the law (*e. g.*, to seek a mechanical explanation of the phenomenon of the heat of mixtures, described in terms of temperature).

5. And finally, it is meaningless to ask for a demonstration of the inexplicability of a given phenomenon in terms of a law upon which no restriction is laid (*e. g.*, the inexplicability of mechanical phenomena in terms of mechanical law, of physical phenomena in terms of physical law).

We may now apply these results to the problem of human conduct as exemplifying a phenomenon the possibility of whose physical

explanation has been doubted. We asked in what sense it had a meaning to make the hypothesis that such a phenomenon was incapable of physical explanation. We have now seen that it can only have a meaning to make such an hypothesis in case it has a meaning to ask for a demonstration of the impossibility that is asserted. Now it is a matter of common experience that the conduct of a human being may be described and explained by means of certain laws,—laws, for example, in which the terms 'motive' and 'character' occur,—long before it is possible to give any physical explanation of that conduct. Has it any meaning to suggest that the conduct thus described and explained in terms of motive and character may eternally lack a physical explanation? Evidently the case is analogous to that in which we ask for a mechanical explanation of heat without first interpreting the phenomena involved in mechanical terms. The inexplicability is indeed eternal in about the same sense that the problem of finding the number of square inches in a cubic foot is eternally insoluble. But it need scarcely be said that to admit this inexplicability is not to assert that we have found a physical phenomenon which must eternally lack a physical explanation. We have found no gap in the order of the physical world.

The problem is, however, an entirely different one if we state it in the Cartesian way. For Descartes, the phenomenon to which a physical explanation was denied was already described in physical terms, say in terms of a slight displacement of the pineal gland. The hypothesis that such a physically described event should be eternally lacking a physical explanation is, as we have seen, meaningless, for the reason that it can have no meaning to ask for a demonstration of the inexplicability asserted. We may conclude, therefore, that this interesting phenomenon of human conduct offers us no illustration of a possible inadequacy of a physical explanation. It has only been supposed to do so either (1) because it was described in terms that were themselves not physical—in which case physical explanation is neither possible nor is it lacking—or (2) because, although described in physical terms, certain tacit restrictions are placed upon the nature of the physical laws which we contemplate; as when in our example of the boat we tacitly restrict the meaning of physical law in such wise as to include the mechanism of propulsion but to exclude the activity of the helmsman from its possible scope.

This somewhat lengthy analysis of a concrete example will enable us to answer the question that suggested it, to wit, What would a non-physical science mean? There seem to be sciences that formulate laws in terms that can not be defined by the use of the measuring rod. Is then the ability to explain and to predict in physical terms an essentially limited one? Or may the non-physical sciences coexist with the physical without limiting them?

In the light of our previous study I think we can see in what sense the latter may be the case. It might perfectly well be that every phenomenon that was capable of a physical description (*e. g.*, notion of every particle of matter in the universe) was also susceptible of a physical explanation, and yet that such phenomena might be so grouped in new classes as to be equally subject to non-physical description and explanation. For example, any clock or watch is a simple mechanism, every detail of whose behavior is susceptible of a physical description and explanation. Yet there is no common physical description, *i. e.*, no physical definition of a 'time-keeper,' including such heterogeneous mechanisms as a spring-watch, a pendulum clock, a water-clock, an hour-glass, a sun-dial. These are grouped together, not because of their resemblant mechanisms, but because of their common function. Only from this point of view can we speak of a 'good' or 'bad' time-keeper. Now to ask 'Why are dollar watches bad time-keepers?' is a question to which the answer, 'because of their cheap construction,' would be satisfactory. The general rule 'cheap watches are poor time-keepers' is a true law, but neither 'time-keeper,' 'poor,' nor 'cheap' is a term of a physical nature. Yet in a watch that keeps 'poor time' there is some physical condition, explicable by physical laws, which is not to be found in another resembling watch that keeps 'good time.'

Just so, to pass from our homely example to the general case, whole sciences may be constructed whose objects of study have no common physical nature, hence no common physical definition, and which formulate laws governing the (non-physical) behavior of those objects in non-physical terms. It would be none the less true that *each* object was composed of particles of matter, and that each particle was subject to physical law. For example, it is readily imaginable that all attempts to find a physico-chemical definition of living organism should fail. . Is there any more reason that they should succeed than that all clocks should be susceptible of subsumption under a single mechanical definition? A living organism may be so called because of a peculiar function it fulfils, in spite of the complete heterogeneity of the physical means which are employed in the fulfilling. Should we expect, then, a science, whose object of study is the living organism, to formulate laws in physical terms? On the contrary, we should expect to find just such terms as 'habit,' 'variation from type,' 'selection,' 'struggle,' appearing in accepted explanations. But that is no reason whatever for doubting that every bit of matter that enters into a living being behaves in a way that is explicable, as it is describable, in physical terms.

To conclude then this sketch of the physical world-order and its

relation to the whole of natural phenomena: The definition of physical science here offered makes it the science of space detail. The hypothesis that every phenomenon describable in physical terms is incapable of explanation in such terms is a meaningless hypothesis; but we need not conclude from this that the physical is the only science. The physical details of nature may perfectly well be grouped in classes that are incapable of physical definition; for objects thus described non-physical laws may be developed. The same object, therefore, may be capable of a double description. Any given human body, *e. g.*, is made up of particles whose only description is physical. As so described its behavior as a whole is the resultant of the behavior of its parts, and is susceptible of physical explanation. This same human body is capable of classification with other human bodies, animal bodies, organisms, etc., whose common element is not physical. As so grouped its behavior is not physically described, and so can not be physically explained. Yet this fact represents nothing indeterminate in the physical world-order.

EDGAR A. SINGER, JR.

UNIVERSITY OF PENNSYLVANIA.

THE MEANING OF ANALYSIS

I SUGGEST that before we proceed to analysis in psychology we obtain a clear idea of what we mean by analysis. A definite fixing of a meaning may at first seem hampering and ideas of course run into one another, but in the long run we shall gain by a more accurate cutting of our words.

I shall consider it advantageous and not a confusion of spheres nor an unlawful transferring of analogies, if we can give definiteness by the use of visual forms. Such visualizations help us to mutual understanding more than word definitions, provided we are careful to remember that these forms are mere forms, have no control over experience and are to be used only in so far as experience fits into them.

I. THE VISUALIZATION OF DIVISION

The word analysis, as popularly used, is identical with division or separation, or in its simplest form with subtraction. Its usual visualization in this sense is a group of points or, when the points are arranged for easier manipulation, the visualization is the line divided into parts, *ac*, divided by *b* into *ab* and *bc*:

FIGURE 1.

With this view a number is thought of as an aggregation of units. There is nothing in this form to show that the parts are in any necessary relation to one another. They are as able to stand by themselves as in the whole, and there even creeps in the implication that the whole is merely the sum of the parts; *ac* becomes a mere name. Therefore the parts seem more real in contrast with the artificial wholes. The result of applying this mathematical form to experience is pluralism, atomism, Monadology, etc.

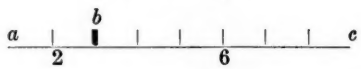
How then, it may be asked, have we the current 'monistic' systems obtained by this form of analysis? The reply is that the current idealistic and 'scientific' monisms are monistic only in contrast with the dualism of subject and object, which was reached by this same divisional analysis. Although the unabridgeable parallelism of the subjective and objective is overcome by regarding the one or the other as phenomenal, yet both idealism and materialism are ultimately pluralistic and not monistic. The fact of memory seems to save idealism from being pluralistic, but this is a position reached independently of, we may say, in spite of the conclusions of analysis.

The application of this divisional formula to the experience of space gives the corresponding view that space is made up of an infinite number of real points.

II. Analysis into Coordinates

There is, however, another mathematical visualization which, although including division and subtraction, does not lead to the scatteredness and disintegration that result from the method of division. This is analysis into x and y coordinates; and it is this geometrical meaning of analysis which I believe it would be of advantage to hold to strictly when the word is used in psychology or in experience anywhere. As has been said, if we wish to divide 8 into two parts, say 2 and 6, which make it up, we can make a picture of a line *ac* and divide it at *b* into *ab* and *bc*.

Figure 2.



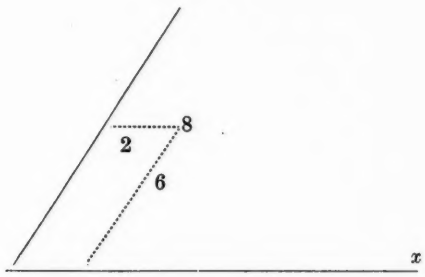
In this picture the fact that the two parts are necessarily parts of the whole 8 does not appear. They are perfectly able to stand by themselves and the 8 has been lost.

I understand an analysis to differ from a simple division, in that the mutual relation of the parts to the whole is not lost. The integrity of the whole is retained. In mathematics, the analysis of 8 into the two parts 2 and 6 may be illustrated by regarding the 8 as a

whole made up of two coordinates (Fig. 3) which have a meaning only because they together make up the 8.

In this visualization the 8 is defined by its relation to two axes, x and y. Their purpose is to afford a fixed standard by relation to which any point may be defined with regard to other points, therefore the angle between them is for the purpose of illustration, a matter of indifference.

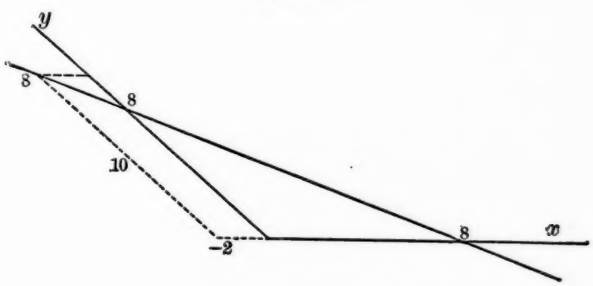
FIGURE 3.



If we wish to express the more general analysis of 8 before we have determined the values of 2 and 6, we shall have the general equation $8 = x + y$, or the equation of the straight line which cuts the x and y axes at the distance of 8 from the intersection. At every point, however, the 8 stands for itself and is not made up out of the parts.

With this process in mind, we shall picture a number not as a group of points nor as a series of points laid off upon a line, but the picture of 8 will be the line cutting the x and y axes at 8 (Fig. 4).

FIGURE 4.



Such a line represents the full content of 8 and moreover shows its relation to all numbers, for by extending the x axis in the minus direction we have $8 = 10 - 2$, etc.

Now turning back to the more customary and perhaps genetically the more original picture for representing a number divided into its parts, namely a straight line (Fig. 2), we shall see that it serves its

purpose as well as it does because it is a particular form of the more general picture which we have given above. In this particular form, the x and y axes have been made to diverge more and more until finally the y axis has become a continuation of the x axis (Fig. 2). We still have $8 = 2 + 6$, but the coordinates are identical with the axes, thus assuming a fundamental character and moreover they coincide with the line of eight which thus, instead of preserving its intactness, is lost and seems to be made up of the parts.

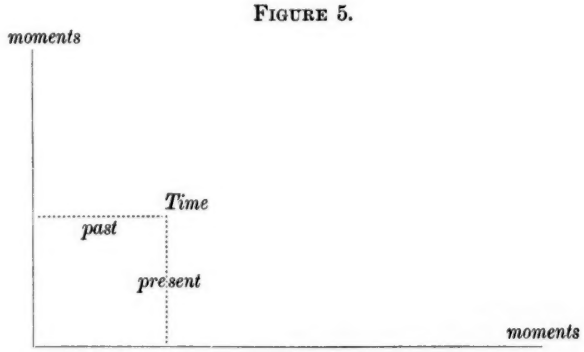
It is the purpose of this paper, therefore, not so much to controvert the popular conception of analysis as to broaden it and to give to analysis its full content and meaning. In this interpretation of analysis, then, I would call attention to the following points:

1. The initial whole is never lost. The 8 retains its integrity and yet full justice is done to the parts 2 and 6, which in turn may be similarly analyzed.

Those who have attempted to reach a conception of unity through the method of division will appreciate a method of conception which never loses the initial unity.

If we are analyzing time, it is very often important to remember that time, though made up of moments, is still a whole; as is adequately represented in Fig. 5.

FIGURE 5.



2. In this conception of analysis, the 6 has a meaning only together with the 2 in making up the 8. The 6 is real, likewise the 2, but only in reference to each other and the 8. (The fact that they are abstractions from the concrete 8 does not affect their reality. The word abstraction is not to be used as a contrast to reality.)

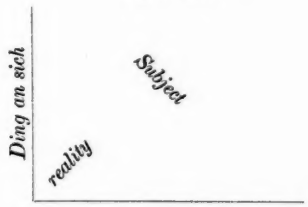
If we keep this picture carefully in mind we shall not be in danger of neglecting a part, in conjunction with which alone the other part or element has a meaning. As for instance some psychologies do, which out of an analysis of consciousness find the will as an element, and then a few pages later we find this will grown quite in-

dependent and walking about by itself as an unconscious will or a subconscious will.

The 6, if derived from the 8, has a meaning only together with the 2 and with reference to the 8.

3. If we keep before our eyes this visualization of the process of analysis, we shall not attach any importance to a word which originated as a factor in an analysis, but which is continued after the corresponding factor, with which alone it has a meaning, has been rejected. We have not the right to keep on employing an analysis after we have rejected one of the legs.

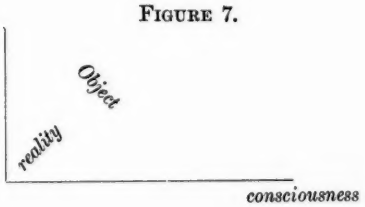
FIGURE 6.



The importance of this point may be illustrated by the *Ding an sich* or object which the idealist rejects as an unreal abstraction but continues to retain the subject. He lets the subject factor encroach more and more over the object side till the object is reduced to 0.

It is further illustrated by the consciousness which the materialist would reject as an ureal abstraction, letting the object encroach on the subject.

FIGURE 7.



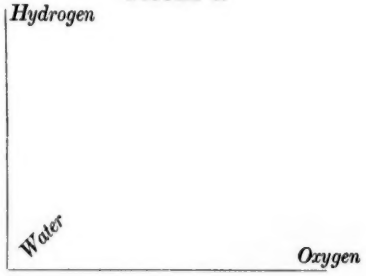
With the divisional conception of analysis the zero can be neglected; with our conception, as shown in Figs. 6 and 7, it can not, for zero is a limit approached but never reached.

A somewhat similar overlooking of essential correlatives is the fault of the sensationalists from Condillac down to Mach. They analyze experience into perceptions of things, and then perceptions of things into sensations and call the last the ultimate. In each step one of the legs of the analysis has been neglected. They might just as well go on and as a next step analyze, with the materialists, sensations into wave motions, for in this step they would neglect no more important factor than they already have in reaching sensations by analysis as simple elements.

4. This form of analysis with its x and y coordinates has the advantage of serving as a framework when we have not yet determined the value of the constituent elements; for instance, in an analysis of water.

Such diagrams do not explain anything. They do not solve the problem of the like and unlike or of unity and plurality. They rather dissipate the problems. They give a picture making grasp-

FIGURE 8.

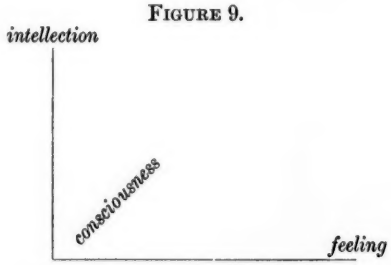


able what might otherwise present unsurmountable difficulties to our thinking and enable us to proceed.

5. This framework makes possible an analysis in which the parts are dependent yet variable.

In consciousness, for instance, feeling and intellection are independent variables, yet there is no feeling without intellection and no intellection without feeling, all of which is represented in the above figure. The word feeling extends clear across, approaching zero at

FIGURE 9.



the line of intellection. Just as, in Fig. 3, by varying the scale and the proportion of the parts any point in the plan may be regarded as 8, so here in Fig. 9 the general form is to regard the whole plane as representing consciousness till a unit has been determined for the analysis.

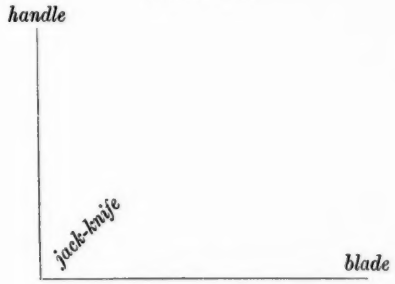
6. The word synthesis is given its true meaning in relation to analysis. Every analysis contains in itself a synthesis.

The following may elucidate the general position (Fig. 10). In case we are analyzing a jack-knife, the handle is not a handle save

in respect to the blade, and both have meanings only in respect to the whole.

Both the handle and the blade are abstractions. Independently of its relation to the jack-knife, the handle as a different fact of expe-

FIGURE 10.



rience may be considered also as composed of horn and brass, and the blade may be also a part of pig iron, and so on.

As has been said, the fact that a thing is an abstraction does not affect its reality in the sense in which we are using the two words. The counterpart to the abstract is the concrete and not the real.

III. APPLICATION OF THIS MEANING OF ANALYSIS

I feel justified in maintaining that this mathematical form of analysis which preserves the relation of the parts to the whole and the integrity of the whole is more applicable to the facts of experience and less open to contradictions than the form of simple division which is often called analysis and that moreover the distinction is important enough to be worth insisting upon.

1. In the first place it corresponds to and fully represents our experience of space. Space as experienced is not abstract nor an abstraction, nor is it a composition, but as a whole it is a concrete in comparison with which the particular parts are abstract. I use concrete as meaning more immediate and the word abstract as more derived. A particular line or square before me is not more concrete but rather more abstract than the experience of space as space. In such cases we must not compare this particular square before me with remembered space or conception-space, but realize that it is only a part of or an abstraction from present experienced concrete space.

2. In the second place, it more truly represents the analysis of chemistry. We will dwell a little upon this point because chemical analyses might, perhaps, be brought forward as contradicting the meaning of analysis which we are trying to establish. For most purposes in chemistry it is sufficient, using the idea of division, to

regard O and H as independent atoms, containing in themselves at least potentially all the characteristics which produce water. When, however, the chemist wishes to avoid metaphysics, he must remember that hydrogen is, only in its relation to other similarly derived atoms. Compare Fig. 8. So H and O have a meaning only in their mutual relation, and in all their relations as parts of all the substances into which they enter. When we think of H, the O seems to be entirely gone, but this is only a seeming, for an inalienable part of the reality of H is its relation to O and the whole reality of H is its relation to all other elements. This fact our picture of analysis prevents us from overlooking.

3. The importance and truth of this meaning of analysis and its wide applicability to experience is illustrated in the third place by the parallelograms of forces in mechanics, which I think we have a right to regard as a development of this form of analysis.

To analyze the force 5, we must use the square of 5, because the force varies as the square of the distance. Figs. 11 and 12.

FIGURE 11.

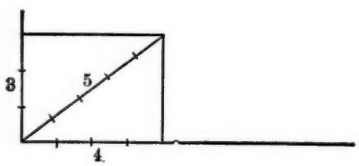
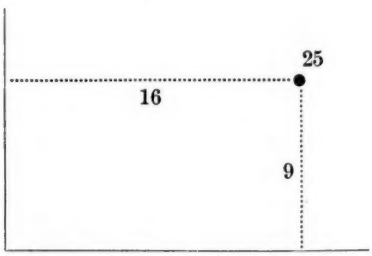


FIGURE 12.



The square of 5 is 25, which, analyzed, gives 9 and 16 or 3 and 4, for the component forces. The complete analysis of the force 5 would be represented by the line of 25.

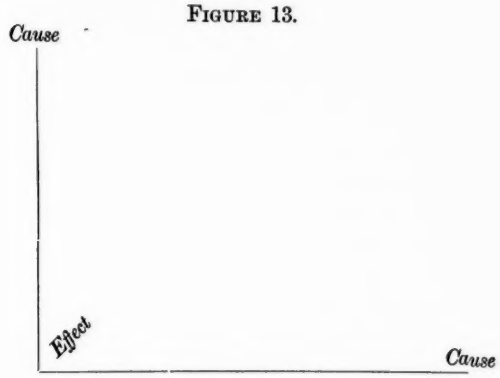
4. In the fourth place the universality of this conception of analysis is evidenced by its applicability in physics to illustrate the analysis of an effect into its causes, Fig. 13.

An effect is therefore a substance, as water is, which we analyze into its elements. This is more than a mere convenience, bringing chemistry into line with cause-effect relations; it becomes an indispensable form when we come to combat the idea that it is the law which produces the effect. The law is merely the result of the analysis of the effect. The law of causation is not a *vis a tergo*. It never pushes into the future.

It is misleading to take the cause which is chronologically prior as the logically prior. Logically the cause is the result of analyzing the effect. From the standpoint of science it is the possibility of

analyzing out the cause of an effect which keeps the relation between the two from being a mere sequence like that of day and night. In the difference between the relation of day to night and that of an effect to its cause, we have a good example of the difference between a division and a proper analysis. Höffding calls the former the

FIGURE 13.

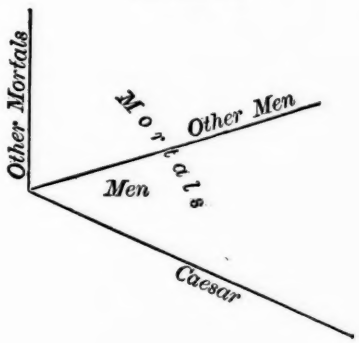


empirical conception of causality and the latter the ideal conception ('Philosophische Probleme,' p. 17).

5. In the fifth place as a justification for this conception of analysis I would point out that this form alone adequately represents analysis in logic.

In Fig. 14 the concept mortals is analyzed into men and other

FIGURE 14.



mortals; and then as a second analysis the concept men is analyzed into Cæsar and other men, giving the conclusion Cæsar is a mortal. By regarding the minus side as negative, all the syllogistic forms can be readily illustrated. The diagram can apply to the intension as well as the extension of terms.

A logical proposition then is one leg of an analysis, the other leg

of which is implied, the triad thus forming the epistemological unit. Logical analysis falls into line with chemistry and mathematics, and this through no forcing of an analogy, but through the use of a single mathematical form to make graspable a great variety of experiences. This interpretation of logic is not to be confused with the realism of the schoolmen. The general term is not more real than the particular, but it is more concrete. The greater concreteness or immediateness which the particular term like Cæsar seems to have is due to the many other relations which it has. In comparison simply with the term men, however, it is more abstract or derived.

6. Finally this meaning is of importance in psychology where we must insist upon 'consciousness,' or 'the Given,' or 'experience' as the primary concrete of which all the so-called elements are in comparison abstractions. That is to say compared with this primary concrete, the subject and object, the ego and the non-ego, the I and the it, the will, the feeling and the intellect are abstractions derived by the process of analysis. This primary concrete (the 'social-consciousness,' 'pure experience,' the 'absolute') is not a deduction nor an induction, nor a composition, nor an hypothesis; it is the point of departure.

After we have determined upon a meaning for analysis we shall be ready to proceed to the use of analysis in psychology and, if consciousness be the best point of departure, to an analysis of consciousness.

GEORGE R. MONTGOMERY.

CARLETON COLLEGE.

DISCUSSION

RELATIVITY AND REALITY

THERE is of course a connection between the recent discussion of relativity or phenomenality and the efforts to define infinity. This connection, too, has been frequently felt and almost as frequently directly avowed by those who have been parties to the different controversies. Simply the antithesis of the real and the relative, and the antithesis of the infinite and the finite present essentially the same fundamental problem to the philosopher. In this paper, or rather in this brief note, only the former of the two antitheses is the object of direct interest; but at the close a suggestion or two will be ventured in regard to the latter.

Even at the present time, and also even among the more prominent thinkers of the present time, the idea that the relative and the real must somehow exclude each other is very much in vogue. True, an adequate philosophy of evolution may seem to demand their

closest intimacy, but philosophy can hardly be said to have taken evolution and its peculiar demands with the seriousness that might have been expected. I do not undertake to say whether the scientist or the philosopher is most to blame for this, but the indifference or the only half-hearted or half-minded attention to evolution appears to me beyond question. Take, in evidence, Mr. Bradley's 'Appearance and Reality.' Some may object that this work already belongs to the past, and certainly the discussion that it has stirred up might be expected to have accomplished something towards relegating even so important a book. But suffice it to say that the discussion is not yet at an end, and the strenuous zeal in numerous quarters to keep the phenomenal and the real, the theoretical and the practical apart, the determination from one reason or another to hold the will aloof, or the struggle to bolster up an epistemological or a psychological or an ethical and spiritual pluralism is excellent evidence that the thinking of the day has not succeeded, satisfactorily to itself, in finding a suitable resting-place for reality in this world of what seems so hopelessly relative.

Possibly reality also 'hath not where to lay its head.' Possibly philosophy is bound to seek, but never find harmony between what is relative and what is real. The latter possibility, however, belies its own contention, since seeking and finding are inseparable, while the former possibility only suggests that to lack a resting-place or a habitation may be as significant metaphysically as it has been theologically or spiritually, and this without any prejudice whatever against the idea of the real being immanent in the relative. Moreover, for my own part, I very strongly feel that the present failure to bring the real and the relative into their true intimacy has been in large part unnecessary, and Mr. Bradley is conspicuous for his needless failure. He is so nearly, if not quite, blind to the real meaning of premises which he has himself stated very clearly.

Thus Mr. Bradley has argued from relativity to phenomenality; yet he is quite insistent that all relationship always implies difference both without and within that which is relative, and this implication certainly shows something in and with the relative that transcends the merely relative. To the same conclusion of phenomenality he has argued from the hopeless, endless regressus involved in any distinction, for example, in that between relation and quality, either party to the distinction being itself divided within itself on the same plan or having within a one-to-one correspondence with what is without, like Royce's perfect map of England, which must include itself, and its included self, and so on, *ad infinitum;* yet differences, each one of which includes the differentiation, must have at least some positive share in the reality of the whole which they comprise.

They may be as 'relative' as you please, they may be hopelessly lacking in that pet-conceit—really a dreadful bug-a-boo—of the hypostatical thinker, namely, in self-identity; but so much the better, for the one-to-one relation or the lack of self-identity which this relation implies, instead of keeping them out of the kingdom of reality, holds them forever in it. Moreover, as regards Mr. Bradley, were his differentiated differences not thus partners in a divided labor of comprising and maintaining reality, it is very hard, indeed, to see how he could have gone even as far as he does in the second part of his book towards restoring reality to human life and experience. And, lastly, Mr. Bradley has argued to relativity and phenomenality from the universally contradictory or paradoxical character of all experience. In fact this argument he relies on almost *ad nauseam*, and it is plainly only a special form of the argument from differentiated differences. Contradiction or paradox is only difference at its extreme. Yet, again, in the light of what he himself has said in his second part one has to marvel that he has failed to see, or has seen only with such slight appreciation, that just the inner difference, or the paradox, of any particular experience saves it, relativity and all, from having no positive part in, or contact with, reality. The inner difference not merely puts it, as has been said, *en rapport* with the totality of things, but also, especially through the proneness to paradox, or extreme self-opposition, insures a multiplicity of other experiences to balance and restrain the individual experience or say a conserving reaction or counteraction for the particular action. The great function of difference is balance, counteraction, conservation; and paradox, as it is manifested, only shows that in experience there moves a principle of integrity, a spirit of wholeness, that forever militates against mere phenomenality.

The idea intended here is this, though the virtual repetitions that follow may be unnecessary: Any particular thing or any particular experience which is divided against itself or whose own inner divisions have that one-to-one correspondence with the totality of the things among which it belongs, is therein and thereby saved from the disaster of mere relativity and phenomenality, for its own inner divisions correct its isolation and make it the true part of a whole, securing it a share in reality and in the necessary integrity of reality by putting it in vital contact with the whole, while at the same time from the outer divisions it gets positive import for its own individuality. With regard to the last point, metaphysically, as well as morally, an individual inwardly divided against itself through a division that is reflected in the world which includes it can be neither unreal nor insignificant.[1]

[1] Kant's *a priori* forms of experience really gave integrity or realistic value to experience, not in spite of, but just because of the antinomies with

But, the significance of individuality aside, if reversing the present standpoint we should start with the integrity and reality of experience as a postulate, that is to say, if we should begin by assuming and asserting, what seems very far indeed from unreasonable, that experience always has positive contact with reality, we could hardly escape from deducing the paradoxical character in experience that Mr. Bradley has made so much of, yet failed to appraise at its full value. How can any experience escape from being formally self-contradictory, if actually it is realistic? Can a part or a relation or what you will in the world of the definite ever be expected to meet the test of self-identity? If there is any wholeness to the world of things or any validity or integrity in the experience of things, can it possibly belong to what is not made up of parts that comprise the whole only by virtue of their lack of self-identity? And, on the other hand, can an undivided whole, a whole whose own self-identity is not the divided labor of unidentical parts, in short a whole that does not share with its parts the lack of self-identity,—can such a whole claim integrity or reality?

So, to return to our starting-point, which was also Mr. Bradley's, relationship implies differences; the different things all individually have some share in all the differences; and in consequence realism as contrasted with phenomenalism is the only possible conclusion from the universal fact of relativity. The real dwells in the differences of things relative and in the life and unity that these differences constantly serve, and it dwells also in the things themselves, since they are themselves all inwardly differentiated, as well as each one different from what surrounds it, and since the inward or intensive differentiation has the one-to-one correspondence with the outward or extensive differentiation. So conditioned, then, the real is plainly immanent in the relative. True, it may not have a visible or tangible form, nor a discoverable habitation, nor even a stone on which to lay its head, but it is neither less real nor less immanent on that account. A world of relations, a world whose reality and integrity depend on differences can hardly be real in any such palpable or hypostatical way.

And being immanent in the relative, after the manner which has now been indicated, reality is necessarily active or dynamic in its nature; to use what must be more than a metaphor, it is a tension of

which they were weighted, and if their antinomic character gave validity, their formal character made individuality also possible. A multiplicity of the objects of experience or of the subjects having experience was wholly consistent with the possibility of validity so long and only so long as the *a priori* forms, which being formal were capable of indefinitely different contents, were antinomic.

differences, of differences at once developmental and conserving or counteractive, giving movement at the same time that they insure poise. This tension of differences, moreover, involves constant change in the world of things, whether taken individually or taken collectively; yet the change, sweeping everything with it, can be only the persistence of reality, the maintenance of what is. Still, beyond this very brief reference to the dynamic character of reality, of a reality that is dynamic because immanent in the relative or in the at once active and counteractive differences that the relative implies, I shall not venture to go at this time. How the real could dwell in the relative and be experienced through it was, as will be recalled, the direct interest of the present note.

So, to conclude with just a suggestion or two in reference to the antithesis of the finite and the infinite always so properly associated with that of the relative and the real, it can hardly be necessary to say that the infinite has already been in evidence in the foregoing discussion. Thus suppose we accept the idea of the infinite of which so much has been heard in the last few years. Infinity, we are told, belongs to any class (group, collection, assemblage, manifold) according as it contains a part to which the whole is equivalent in the sense that between the elements of the part and those of the whole there subsists a unique and reciprocal, or one-to-one, correspondence. Under this test the series 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$, etc., is infinite. The perfect map of England is infinite. Plato's individual, having in its parts a one-to-one correspondence to the classes of society, is infinite or is a party to the infinity of a society that includes such an individual. And the reality which is immanent in the relative, or in the differences of the relative that are themselves differentiated on the plan of a one-to-one correspondence, is infinite or, should we not say with Spinoza, absolutely or infinitely infinite. Furthermore, if our account of reality has been correct, its infinity is now seen to involve these things: (1) relationship, (2) differences, (3) distinction between intension and extension or between inward and outward differentiation, (4) one-to-one correspondence, (5) balance or integrity, and (6) activity or movement. Such an infinity, moreover, is immanent in the finite even as the real is immanent in the relative.[2]

ALFRED H. LLOYD.

UNIVERSITY OF MICHIGAN.

[2] Quite in line with this analysis of the concept of infinity I have already suggested in another place ("Professor Fullerton on 'The Doctrine of Space and Time,'" *Psychological Review*, March, 1902, pp. 174–180) that, mathematically, infinity has involved the distinction between quantity as mass and quantity as ratio or relation, and that with the development of this distinction, whether implied or expressed, the calculus and a mathematics of motion were

NOTE ON PROFESSOR MÜNSTERBERG'S 'PERCEPTION OF DISTANCE'

PROFESSOR MÜNSTERBERG'S article in the last number of the JOURNAL, discussing the perception of distance with the verant, contains the statement: "The large public, suffering from the defects of its virtues, deprived, that is, of the privilege of a natural magnifying glass on account of normal eyesight, will of course gladly make use of this system of lenses. . . . If not every myopic person, then at least every myopic psychologist must have enjoyed these experiences before." In this connection, it seems well to note that the myopic eye probably has no advantage over the normal eye in this particular, provided the observer looks through a magnifying glass of short focal length. I have obtained the plastic effects very beautifully with lenses of 12 and 16 diopters. The same result may be obtained, of course, by looking at a photograph through a camera. The picture on the glass plate has all the plastic beauty that the stereoscope would show. In order not to confuse imagined perspective with this mechanically produced perspective, it is well to look at the picture upside down, or to use pictures which appear quite flat to the unaided eye.

JAMES BURT MINER.

THE STATE UNIVERSITY OF IOWA.

made possible. In this earlier paper appeared such statements as these: 'Infinity [treated as a quantity or a quasi-quantity] is only an indirection for [some] constant relation,' the constant relation, or differentiation, of bisection, for example, in the series: 1, ½, ¼, ⅛ ... etc. "The infinitely small or great taken quantitatively [or massively] is only symbolic of a uniform process, of an activity under a fixed law, of a principle immanent in every term of the series and giving to the series as a whole a unity that quite transcends the limitations of merely quantitative [or massive] division." "Infinity [as mass] stands as an indirect but not less effective way of asserting the constructive principle of a series and so also of symbolically presenting in a quasi-static form the dynamic character that the series contains or even more generally the quality of any number-group." And again: "The real last term [of an infinite series] is not indeed one more among all the other terms and coordinate with them; rather it is the finally abstracted principle, say the sheer parallelism [in the case of the lines that meet at infinity] or the bare fact of bisection—without anything left to bisect [in the series 1, ½, ... etc.] that sets or establishes the series." The ultimate, like the primary, can be only a mere abstraction for the eternal and omnipresent, for something immanent in the finite members of the series, or in the process or operation by which the series is constructed and by which, among other things, as the series develops each new term is so differentiated as to get a one-to-one correspondence with the term that has preceded it as well as with the whole out of which the series has sprung.

REVIEWS AND ABSTRACTS OF LITERATURE

The Theory of Advertising. WALTER DELL SCOTT, Ph.D. Boston, Small, Maynard and Co. 1904. Pp. xii + 240.

Professor Scott's book, which is essentially an application of the psychology of attention, perception, imagery, the association of ideas and suggestion to the problems of advertising, has already proved its usefulness to the practitioner of that profession or business. Rarely has the first step in an applied science been so heartily welcomed. Presumably Professor Scott's judgment in this field, being the result of experiment and systematic reflection, is better than that of any critic, but of the doctrine of one chapter the reviewer ventures a criticism. On general principles it seems risky to base recommendations on the theory that the power of an author or advertisement-writer to present facts so as to arouse a given type of imagery depends upon the presence in him of that type of imagery. For instance Professor William James reports himself as excessively low in the scale of vividness and fidelity of images of all sorts. Yet he surely has command over a most graphic and picturesque style and would, one imagines, be capable of writing advertisements that would make the prospective buyer's mouth water or fingers itch. And, in general, the doctrine that the presence of a tendency to feel in a certain way is correlated with the capacity to allow for and influence that feeling in others seems to possess only verbal plausibility.

Professor Scott's book is valuable to teachers of psychology as well as to advertisers. It is pedagogically a great advantage to have a beginning class in psychology get in the first weeks a vague idea of psychology as a whole, of what it is all about. Chapters II., III. and VII.–XIV. of 'The Theory of Advertising' may well be given a high place among the books and articles suitable for this propædeutic, in spite of, and perhaps also because of, the connection of the discussion with a particular art. The college sophomore needs some protection against 'mental states as such' and cognitions, emotions and volitions.

Very many lessons can be drawn by one of speculative mind from the fact that a professor of psychology writes a series of articles on psychology for a trade journal. The prospect of a host of applied sciences developing from empirical psychology has been ever before us, but it has, hitherto, had somewhat the form of a mirage and has kept in the dim distance. One of the will-of-the-wisps having become real, we may hope to see psychological methods applied to the problems of government, industry, social arrangements and the like. Evidently we shall be burdened with a new set of moral problems as soon as psychology gains the knowledge which gives power of control over men and women. We all agree that it is a grand thing for science to teach a man how to bully the ions into doing what he wants, or how to murder all the malaria parasites. But to teach men how to bully everyone into eating cereallet or to murder all desires for higher wages! Psychology will have new responsibilities.

EDWARD L. THORNDIKE.

TEACHERS COLLEGE, COLUMBIA UNIVERSITY.

L'examen de la suggestibilité chez les nerveux. L. SCHNYDER. *Archives de Psychologie,* August, 1904, pp. 44–57.

Schnyder has examined 203 cases of a greatly varied number of nervous affections, with a view to determine to what extent the sham application to the fingers of two rings connected with a useless rheostat, leads to subjective sensations. Under very uniform conditions with the eyes closed, the patient is simply asked, 'Do you feel anything?' while the rheostat is being changed; the answers are at once written down; the question is repeated from minute to minute in case that the subject does not make a spontaneous statement after some new movement of the handle. The examination is not extended beyond five minutes, and since the tests were made judiciously, and always by the author, and since they were preceded by tests of the reliability in an ordinary examination of sensibility, the results are quite comparable. His cases are as follows:

In neurasthenia (rapid fatigability, phobias, conviction of impotence) and a certain number of dyspeptics: 53 women with 41 positive results; and 51 men with 31 positive results.

In hysteria (astasia-abasia, contracture, anorexia): 12 out of 28 women; and 4 out of 9 men.

In mental diseases (melancholia and hypochondriasis, catatonia and dementia præcox): 3 out of 13 women and 8 out of 22 men.

In various organic nervous affections: 5 out of 17 women; and 6 out of 10 men.

The expectant attention of the neurasthenic explains the great prevalence of positive results among them. The results in hysteria might be surprising, but they show that outside of a special strain the hysterical are more indifferent, in harmony with what Janet considers to be at the bottom of their principal sensory disorder. All depends on the relation of the stimulus to a fixed system of auto-suggestions. In this case the results are positive. In hypochondriasis and melancholia there prevails an averse scepticism, at times with a veritable negative auto-suggestion.

Schnyder does not rank all suggestibility on as favorable a level as educability, as Bérillon puts it. It is preferable to a sceptical or indifferent attitude, but its absence denotes a certain strength of judgment of great importance, as a guarantee for a rational psychic treatment. His procedure might rank as a test of individual psychology, but also as a curative factor—as a means to convince the patient of the possible error of interpretation of other auto-suggestive symptoms.

Both from the point of view of individual psychology and from that of a practical stepping-stone in psycho-therapeutic reeducation, the method seems to be well chosen, and with proper exclusion of verbal impressions and accessory suggestions of expectation while the apparatus is being put on, the conditions of the test are fairly simple and the results comparable.

ADOLF MEYER.

NEW YORK PATHOLOGICAL INSTITUTE,
WARD'S ISLAND.

Observations sur le langage intérieur des enfants. A. LEMAITRE. *Archives de Psychologie,* August, 1904, pp. 1–43.

This article gives, first, a résumé of 14 cases of word imagery in children, published by him in 1902, and, secondly, a detailed account of 18 new cases. He divides them into *verbo-visuels,* who visualize their words, *verbo-auditif,* who think in mentally heard words, *verbo-moteur,* who think in mentally spoken words, *auditivo-visuels,* who think in both ways, *symbolo-visuels,* who visualize words in print or script, at the same time representing, on or near the words, pictures symbolic of the objects denoted, and *visuelo-moteur,* in whom the visual and articulatory word images are associated. These 32 cases were distributed as follows: verbo-visuels, 10; symbolo-visuels, 6; auditivo-visuels, 6; visuelo-moteur, 3; verbo-auditif, 4; verbo-moteur, 3. In his conclusion he says that in children of 13 to 14, different types of word images are most frequently observed; that these types are more complex than in adults, where one brain center gains predominance over the others. He notices a tendency to become auditory about the time of puberty. He adds the following table giving statistical results of a study of 90 children in three school classes:

	1901–2.	1902–3.	1903–4.	Total.	Per Cent.
Verbo-moteur,	11	15	15	41	45.55
Verbo-auditif,	6	3	3	12	13.33
Verbo-visuel,	5	7	2	14	15.56
Symbolo-visuel,	5	5	5	15	16.67
Auditivo-visuel,	3	0	2	5	5.56
Visuelo-moteur,	1	0	1	2	2.22
Equilibres,	0	0	1	1	1.11
	31	30	29	90	100.00

The type called 'equilibre' is one in which the three kinds of images, visual, auditory and articulatory are simultaneous or nearly so. He also describes a so-called 'type indifferent' in which they alternate.

Results of two experiments are given. (1) On auditory memory, in which three Latin sentences, spoken three times, were reproduced by the children after three hours of school work. The best reproductions were by the visual and the auditory types. (2) On visual memory: ten sentences, in two groups, the first group all Latin, the second, three Latin and two German, were shown on a blackboard and explained, the exposure lasting seven minutes. The sentences were then rubbed out and the children asked to write what they remembered. The results were as follows:

Types.	Seconds.	Per Cent.
Audito-visuels and equilibres,	180	97.50
Auditif,	322	86.25
Visuels,	359	86.45
Moteurs,	440	64.

Other tests on the memory of texts or numbers confirmed the superiority of the auditory type.

M. Lemaitre notes that the scholastic dispute between nominalists and realists was, in his belief, entirely 'endophasique,' and that the nominalists were of the articulatory-motor type, the realists were visuels, and conceptualists were auditory.

Incidentally many examples of synæsthesia and of number forms are described.

WILFRID LAY.

NEW YORK.

La Finalité en Biologie. E. GOBLOT. *Revue Philosophique,* July, 1904, pp. 24–37.

This is one of several contributions by the author bearing upon the same subject. The present article was called forth by a letter from M. Chas. Richet, which had been appended to another of the author's recent papers. Richet there formulates two great laws, to which, he holds, all living things conform: (1) an 'effort toward life,' and (2) 'progress in the manifestations of life.' Goblot rejects both of these generalizations. He admits, as he is bound to do, a general advance in the degree of organic complexity, but denies the existence of *progress* in the sense of an advance toward a goal which may be said to be *better.* Relative to the needs of a species or an individual, this or that thing may be regarded as good or bad, but such terms are purely relative, and can not be applied to the living world as a whole.

The scientist can not escape, however, from 'finalistic' conceptions, which he employs unconsciously, even while rejecting them in theory. But it is the 'providential teleology, the anthropocentric and anthropomorphic teleology, the vitalistic teleology' which he rejects as anti-scientific. Thus, 'la mauvaise finalité chasse la bonne.' No scientist would admit that the eye was 'made for seeing,' but he says correctly that vision is the reason for the eye's existence. "If vision explains itself by the structure of the eye, the structure of the eye explains itself also by vision, and this explanation is precisely what the student seeks when he investigates the how and the why of organic evolution." Again, it is the existence of finality which gives to physiology its place as an independent science, for 'function is a finalistic idea.'

Final causes, according to Goblot, 'should not be sought above and beyond the facts,' but in the series of phenomena itself. 'Final causes,' if the term may be employed at all, *are efficient causes.* In considering the variation of a species of organisms, he would designate as a final cause 'a series of circumstances such that the species would perish if it were not transformed.' These circumstances 'are, indeed, efficient causes, but they are also final causes, since the relation of fitness between them and the character in question is the reason for their efficiency.' Many of the transformations which take place in the organic world can not, however, be regarded as manifestations of finality, *i.e.,* such as are non-adaptive.

It will be seen that the author has concerned himself mainly with *defining* finality as he chooses to employ the term. From the biologist's

standpoint, I should say that Goblot had not succeeded in throwing much light upon the subject. It is not so much definitions that we need in this field at present as it is facts, and these facts are being investigated by the modern 'experimental' school of biology. Is it or is it not true that living matter in general simulates intelligent choice in its power to respond adaptively to conditions which are foreign to individual and racial experience? Are there or are there not organic structures of purely 'prophetic' significance? Is the course of evolution governed in the main by environmental conditions, or is it determined by innate tendencies to vary in particular directions? These are real problems to be solved by the accumulation of facts.

The author's comparison between the operations of human intelligence and those of natural selection is interesting, though by no means novel.

FRANCIS B. SUMNER.

COLLEGE OF THE CITY OF NEW YORK.

JOURNALS AND NEW BOOKS

INTERNATIONAL JOURNAL OF ETHICS. October, 1904. Vol. XV., No. 1. *The Bias of Patrotism* (pp. 1–27): ALFRED JORDAN. – Preference for one's country is justifiable just so long as it does not conflict with the equally justifiable preference of other men for their countries. *Moral Instruction in Schools* (pp. 28–47): HERBERT M. THOMPSON. – Contains interesting examples of the author's secular method of teaching morals to children, and an arraignment of the current attempts to base ethical truth upon theological dogmas. *Music and Morality* (pp. 48–63): HALBERT H. BRITAN. – Music is of no direct value in developing the moral nature but by its elevating effect upon the emotions it serves indirectly to increase moral efficiency. *Truth and Imagination in Religion* (pp. 64–82): RALPH BARTON PERRY. – Between those who regard religion as purely subjective and those who believe it to be essentially bound up with theoretical dogmas the author takes up a middle position. Religion does involve an objective or ontological reference, but that reference is practical rather than theoretical. So long as reality is such as to vindicate our religious attitudes it matters not at all as to its particular constitution. *Human Pre-existence* (pp. 83–95): J. ELLIS MCTAGGART. – It is difficult to believe in life after death unless we believe also in life before birth. In view of the stock of aptitudes and tendencies possessed by each individual at the time of his birth the author feels it reasonable to assume a pre-existent life for their acquirement. That such inborn traits may be due to inheritance is a view which the author apparently does not consider worthy of mention. The lack of memory of our past lives is regarded as the main difficulty, though not an insuperable one. *A Japanese View of American Trade Unionism* (pp. 96–108): HOITO ITO. – Economic issues are still obscured by the doctrine of natural rights. The right to one's job no less than the right to buy labor in the cheapest market are valid only in so far

as they accord with the general welfare. Measured by this criterion Unionism is right in principle though in danger of being carried to excess. So far, however, its abuses of power have been slight in comparison with the temptations to which it has been exposed. For the strike-breaker there should be little sympathy. *English Prisons and their Methods* (pp. 109–116): H. J. B. MONTGOMERY. – The author, speaking from experience, protests against the current notion that English prisoners are coddled. He describes the meaningless and arbitrary indignities to which convicts are subjected, and by which they are made worse instead of better. *Book Reviews* (pp. 117–133): Edward Caird, *The Evolution of Theology in the Greek Philosophers:* J. B. BAILLIE. Archibald Duff, *The Theology and Ethics of the Hebrews:* NATHANIEL SCHMIDT. By Five Hindoo Scholars, *Aspects of the Vedanta:* J. ELLIS MCTAGGART. Henry T. Finch, *Primitive Love and Love-Stories:* NATHANIEL SCHMIDT. Arthur V. Woodworth, *Christian Socialism in England:* D. H. MACGREGOR. Walter McDonald, *The Principles of Moral Science:* F. MELIAN STAWELL. By Various Authors, *Methods of Social Advances:* C. P. SANGER. W. G. Jordan, *Prophetic Ideas and Ideals:* NATHANIEL SCHMIDT. Charles F. Dole, *The Religion of a Gentleman:* NATHANIEL SCHMIDT.

THE PHILOSOPHICAL REVIEW. November, 1904. Vol. XIII., No. 6. *The Present Problems of General Psychology* (pp. 603–621): JAMES WARD. – Between the presentationalists, who would make the subject a function of its objects, and the idealists, who would regard objects as states of the subject, the author takes a middle position. He holds that subjectivity is identical with selective (rather than creative) activity, and that, as such, it is a necessary and irreducible aspect or pole of experience. In the problem of the subconscious, and in the conflict between the structural and functional ideals of method, the author also pleads for an intermediate position. *A Factor in Mental Development* (pp. 622–626): MARGARET FLOY WASHBURN. – A most ingenious attempt to explain the development of the higher mental functions from 'the possibility of reacting to stimulation that neither hurts nor helps the organism, at the moment of its operation.' *Scepticism* (pp. 627–641): A. K. ROGERS. – No scepticism is or can be absolute, for all intelligent doubt involves a belief in something as true. Scepticism, moreover, even so far as it is applied to particular judgments, involves some positive belief or conviction. The more judgments a given judgment is consistent with, the less reason we have to doubt it. *Ethical Subjectivism* (pp. 642–659): T. DE LAGUNA. – The intellectualistic view, according to which virtue is knowledge, is not incompatible with ethical subjectivism, and can be reconciled with the voluntaristic view that virtue is well-meaningness by considering that the knowledge of what is truly right will surely be developed from attempts to do what seems right. Discussion—*Professor Bawden's Functional Theory: A Rejoinder* (pp. 660–665): GRACE MEAD ANDRUS. – The author repeats her criticism of Professor Bawden's articles on the nature of physical and psychical,

and charges him with using, for purposes of philosophical synthesis, abstractions from the special sciences. Reviews of Books: J. Dewey, *Studies in Logical Theory:* A. S. PRINGLE-PATTISON. Th. Lipps, *Grundlegung der Æsthetik:* J. H. TUFTS. W. Wundt, *Ethik:* E. B. MCGILVARY. Summaries of Articles. Notices of New Books. Notes.

Bossert, A. *Schopenhauer als Mensch und Philosoph.* Dresden: C. Reissner. 1905. 382 pp. 8 vo. 6 m.

Cohen, H. *System der Philosophie II. Ethik des Reinen Willens.* Berlin: B. Cassirer. 1904. 641 pp. 8vo.

Dinger, H. *Die Dramaturgie als Wissenschaft. I. Die Dramaturgie als theoretische Wissenschaft.* Leipzig: Veit & Co. 1904. 326 pp. 8vo. 7.50 m.

Fullerton, G. S. *System of Metaphysics.* New York: The Macmillan Co. 1904. 8vo. x + 627 pp. $4.00 net.

Sidis and Goodheart. *Multiple Personality.* New York: Appleton & Co. 1905. 462 pp. 8vo.

Walter, J., et al. *Zur Erinnerung an Immanuel Kant.* Halle: des Waisenhauses. 1904. 374 pp.

Wendt, G. *Didaktik und Methodik des deutschen Unterrichts der philosophischen Propädentik.* München: O. Beck. 1905. 153 pp. 4.50 m.

Wiechowski, K. *Die Unterbrechung des Kausalzusammenhanges.* Breslau: Schletter. 8vo. 1.70 m.

Windelband, W. *Die Philosophie im Beginn. des 20 Jahrh. s. I. Bd.* Heidelberg: Winter. 1904. 8vo. 5 m.

NOTES AND NEWS

THE two hundredth anniversary of the death of John Locke was commemorated at the George Washington University, on November 12, under the auspices of the Society for Philosophical Inquiry. The program was as follows: 'Locke on Government': President Needham, of the George Washington University. 'Locke's Influence on Modern Psychology': The Rev. Dr. E. A. Pace, of the Catholic University of America. 'Locke's Metaphysics of Causality and Space': Dr. Wm. T. Harris, U. S. Commissioner of Education. 'Locke's Personality': Dr. William Osler, of Johns Hopkins University.

AT King's College, London, Professor Caldecott will lecture on general psychology during the first and second terms of the coming session; Professor Halliburton, on histological psychology, during the first term, and Dr. C. S. Meyers, on experimental psychology (with demonstrations and laboratory work), during the second and third terms.

MR. FRANCIS GALTON, F.R.S., has founded in London University a fellowship for the promotion of the study of 'National Eugenics,' 'the study of the agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally.'

MISS FLORENCE FITCH, Ph.D. (Berlin, 1903), has been appointed associate professor of philosophy at Oberlin College.